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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,881	08/31/2001	Ping Li	021238-478	9479

7590 04/13/2004

Peter K. Skiff, Esq.  
BURNS, DOANE, SWECKER & MATHIS, L.L.P.  
P.O. Box 1404  
Alexandria, VA 22313-1404

EXAMINER

WALLS, DIONNE A

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 04/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/942,881

**Applicant(s)**

LI ET AL.

**Examiner**

Dionne A. Walls

**Art Unit**

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 43-74 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 43-74 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 43-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stuetz (US. Pat. No. 4,397,321).

Stuetz discloses nearly all that is recited in the claims, since it discloses a cut filler composition, for use in a cigarette, comprising tobacco having uniformly dispersed therein a catalyst composition which can consist of a combination of manganese oxide and/or iron oxide, and potassium and/or calcium oxides (corresponding to the claimed "at least one additive capable of acting as an oxidant....and/or as a catalyst") (see entire reference). While Stuetz may not specifically state that the catalyst particles are in the form of nanoparticles, it does state that the efficiency of toxic material reduction in smoke delivered by the disclosed catalyst *increases* as the particle size of the catalyst decreases. Also, Stuetz states that a lessened amount of the catalyst is required when a "colloidal" metal oxide catalyst is used. (Note: Brady et al ("Fundamentals of Chemistry") states that "colloidal" mixtures are those in which the particles of at least one of the substances have a dimension in the range of 1 – 1000nm (corresponding to the claimed "nanoparticles")(see page 409)). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize the catalyst of

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Stuetz as a colloidal dispersion, with the above particle size range, in order to require a lessened amount of catalyst and enable an increased efficiency of reduction of toxic components in cigarette smoke.

The disclosure of Stuetz contemplates a tobacco composition having a catalyst containing both manganese oxide and iron oxide, since it discloses "at least one" transition metal oxide can be used.

It follows that the claimed metal oxides, since having the claimed particle size, would also have the claimed surface area parameters.

It follows that the additive would catalyze the conversion of carbon monoxide at the claimed temperature range since these are the temperatures achieved during the smoking of a cigarette.

Also, it would have been obvious to one having ordinary skill in the art at the time of the invention to optimize the amount and size of the catalyst used in the tobacco filler in order to arrive at the claimed carbon monoxide conversion, after routine experimentation, in order to provide for optimal toxic component reduction.

### ***Response to Arguments***

3. Applicant's arguments filed January 27, 2004 have been fully considered but they are not persuasive.

- Applicant argues that there is no disclosure or suggestion in Stuetz of using iron oxide nanoparticles, even though Stuetz provides examples of catalysts which include iron oxide and states that the catalyst composition should be less than 77 microns. The Examiner disagrees. Stuetz states that a preferred component in the catalyst of its

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invention is *either* iron oxide or manganese oxide (see col. 2, lines 53-58). Further, as stated above, Stuetz clearly discloses that the efficiency of toxic material reduction in cigarette smoke increases as the particle size of the incorporated catalyst decreases (col. 2, line 67-col. 3, line 10). Stuetz further emphasizes this point by using, as an example, manganese oxide in various amounts and sizes. The object of this example is to show that *less* metal oxide catalyst is needed, the *smaller* the particle size is. Also, the example illustrates that colloidal-sized catalyst particle size is envisioned by the reference. (Note: As stated above, "colloidal" particles is synonymous with "nano-" particles). Just because the Stuetz disclosure bases this example on the use of manganese oxide, this is not an indication, as read in light of the entirety of the disclosure, that the same would not apply to the use of iron oxide – also a preferred metal oxide catalyst component. The Examiner believes that this disclosure provides sufficient motivation for one having ordinary skill in the art to provide the iron oxide–based catalyst in the form of nanoparticles.

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

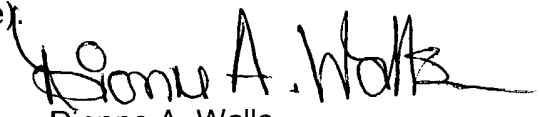
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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dionne A. Walls whose telephone number is (571) 272-1195. The examiner can normally be reached on Mon-Fri, 7AM - 4:30PM (Every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven P. Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Dionne A. Walls  
Primary Examiner  
Art Unit 1731

April 10, 2004